

CLAIMS

1. A bind processing method in which sheets of loose leaf paper, on which a plurality of punch holes are formed along one side of the sheets of paper, are bound with a binder, the
5 division ring portions of which are arranged at regular intervals along both long sides of a spine portion, the method comprising:

pinching and closing the division ring portions of the binder when a pair of upper and lower pushers are driven in the closing direction by an elevating drive mechanism for
10 elevating the pair of pushers symmetrically in the vertical direction; and

engaging forward end portions of the division ring portions, which compose a pair in such a manner that the spine portion of the binder is interposed between the division ring portions,
15 with each other in punch holes formed on the sheets of loose leaf paper.

2. The bind processing method according to claim 1, wherein two sets of the pairs of upper and lower pushers are arranged
20 in the longitudinal direction, one set of the pair of upper and lower pushers pinch a back face side of the division ring portion of the binder so as to rotate the upper and lower division ring portions in the closing direction, and

the other set of the pair of upper and lower pushers pinch
25 the forward end sides of the division ring portion of the binder so as to engage the forward end portions of the opposing division

ring portions with each other.

3. The bind processing method according to claim 1, wherein
a sheet table, which supports sheets of paper to be bound,
5 is made to proceed to the binder by a table moving mechanism
for advancing and retreating the sheet table to the binder
when the pair of pushers conducts binding, so that the generation
of abrasion between the division ring portion and the inner
wall face of a punch hole can be suppressed when the division
10 ring portion of the binder proceeds into the punch hole on
the sheets of paper.

4. A bind processing device using a binder, along both long
sides of the spine portion of which division ring portions
15 are arranged at regular intervals, comprising:
an upper side pusher and a lower side pusher;
an elevation drive mechanism that elevates the upper side
pusher and the lower side pusher symmetrically with respect
to the vertical direction; and
20 a drive motor,

wherein the upper side pusher and the lower side pusher
are driven in the closing direction so as to close the division
ring portions of the binder, and forward end portions of the
division ring portions, which compose a pair in such a manner
25 that the spine portion of the binder is interposed between
the division ring portions, are engaged with each other in

punch holes on the sheets of loose leaf paper.

5. The bind processing device according to claim 4, wherein
the upper and the lower pusher includes a first upper pusher
5 and a first lower pusher, which are arranged in the longitudinal
direction, and also includes a second upper pusher and a second
lower pusher,

the first upper pusher and the first lower pusher pinch
a back face side of the division ring portion of the binder
10 and rotate the upper and the lower division ring portion, and

the second upper pusher and the second lower pusher pinch
a forward end portion side of the division ring portion of
the binder and engage the forward end portions of the opposing
division ring portions to each other.

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6. The bind processing device according to claim 4, further
comprising:

a sheet table for supporting sheets of paper to be bound;
and

20 a table moving mechanism for advancing and retreating
the sheet table to the binder, wherein
when binding is conducted by the upper and lower pusher,
the sheet table is advanced toward the binder so as to suppress
the occurrence of abrasion caused between the division ring
25 portion and the inner wall face of the punch hole when the
division ring portion of the binder proceeds into the punch

holes of the sheets of paper.

7. The bind processing device according to claim 4, further comprising

5 an elevating pin provided on the sheet table, wherein the elevating pin is inserted into the punch holes of the sheets of paper on the sheet table so as to correct a positional deviation of the punch hole of each sheet of paper.

10 8. The bind processing device according to claim 4, the pusher elevation drive mechanism including:

a feed screw arranged in the longitudinal direction having an upper half portion in which a screw is formed and a lower half portion in which a screw inverse to the screw of the upper 15 half portion is formed; and

an upper slider and a lower slider in which a female screw is respectively formed so that the upper slider and the lower slider can be engaged with the upper half portion and the lower half portion.

20 9. The bind processing device according to claim 4, the elevating drive mechanism of the pusher including: a pair of levers connected with each other by a pin; and a lever opening and closing drive mechanism.

25 10. A bind processing device using a binder in which division

ring portions are arranged at regular intervals along both long sides of the spine portion, a connection means composed of a pin and a groove is provided on both sides of the spine portion, and the binders can be connected in parallel with each other and when the binders are slid from each other in the lateral direction, the pin and the groove can be released from each other, the bind processing device comprising:

5 a slider that slides the binder in the lateral direction;
and

10 a slider drive mechanism,

 wherein the front row binder is laterally slid by the slider and separated from the rear row binder.

11. A bind processing device for binding sheets of loose leaf paper, along one side of which a plurality of punch holes are formed, with a binder, along both long sides of the spine portion of which division ring portions are arranged at regular intervals, the bind processing device comprising:

15 a sheet table that supports sheets of loose leaf paper;
20 and

 an elevating pin provided on the sheet table and proceeding into the punch holes of the sheets of paper so as to correct a positional deviation of the punch hole of each sheet of paper.

25 12. A binder cartridge in which a plurality of binders, along both long sides of the spine portions of which division ring

portions are arranged at regular intervals, are laminated and accommodated, the binder cartridge comprising:

a longitudinal through-groove formed in a vertical intermediate portion on the front wall in the horizontal direction; and

a crank-shaped guide groove, the plane shape of which is formed in a right angle, arranged in parallel with the longitudinal through-groove and formed on the front wall, wherein

a front row binder can be picked up forward when the front row binder in the binder cartridge and the gate portion, in which the crank portion of the crank-shaped guide groove is formed, are relatively slid in the lateral direction.

13. A binder lamination body accommodated in a binder cartridge including a longitudinal through-groove formed in a vertical intermediate portion on the front wall in the horizontal direction and also including a crank-shaped guide, the plane shape of which is formed into a right angle, arranged in parallel with the longitudinal through-groove and formed on the front wall.

14. A finisher device having a bind processing device using a binder, along both long sides of the spine portion of which division ring portions are arranged at regular intervals, the bind processing device comprising: an upper side pusher and a lower side pusher; an elevation drive mechanism for elevating

the upper side pusher and the lower side pusher symmetrically
with respect to the vertical direction; and a drive motor,
wherein the upper side pusher and the lower side pusher are
driven in the closing direction so as to close the division
5 ring portions of the binder, and forward end portions of the
division ring portions, which compose a pair in such a manner
that the spine portion of the binder is interposed between
the division ring portions, are engaged with each other in
punch holes on the sheets of loose leaf paper.

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15. A bookbinding device having a bind processing device using
a binder, along both long sides of the spine portion of which
division ring portions are arranged at regular intervals, the
bind processing device comprising: an upper side pusher and
15 a lower side pusher; an elevation drive mechanism for elevating
the upper side pusher and the lower side pusher symmetrically
with respect to the vertical direction; and a drive motor,
wherein the upper side pusher and the lower side pusher are
driven in the closing direction so as to close the division
20 ring portions of the binder, and forward end portions of the
division ring portions, which compose a pair in such a manner
that the spine portion of the binder is interposed between
the division ring portions, are engaged with each other in
punch holes on the sheets of loose leaf paper.

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16. A finisher device having a bind processing device using

a binder in which division ring portions are arranged at regular intervals along both long sides of the spine portion, a connection means composed of a pin and a groove is provided on both sides of the spine portion, and the binders can be connected in parallel
5 with each other and when the binders are slid from each other in the lateral direction, the pin and the groove can be released from each other, the bind processing device comprising: a slider for sliding the binder in the lateral direction; and a slider drive mechanism, wherein the front row binder is laterally
10 slid by the slider and separated from the rear row binder.

17. A bookbinding device having a bind processing device using a binder in which division ring portions are arranged at regular intervals along both long sides of the spine portion, a connection means composed of a pin and a groove is provided on both sides of the spine portion, and the binders can be connected in parallel
15 with each other and when the binders are slid from each other in the lateral direction, the pin and the groove can be released from each other, the bind processing device comprising: a slider for sliding the binder in the lateral direction; and a slider drive mechanism, wherein the front row binder is laterally
20 slid by the slider and separated from the rear row binder.

18. A finisher device having a bind processing device for
25 binding sheets of loose leaf paper, along one side of which a plurality of punch holes are formed, with a binder, along

both long sides of the spine portion of which division ring portions are arranged at regular intervals, the bind processing device further comprising: a sheet table for supporting sheets of loose leaf paper; and an elevating pin provided on the sheet 5 table and proceeding into the punch holes of the sheets of paper so as to correct a positional deviation of the punch hole of each sheet of paper.

19. A bookbinding device having a bind processing device for 10 binding sheets of loose leaf paper, along one side of which a plurality of punch holes are formed, with a binder, along both long sides of the spine portion of which division ring portions are arranged at regular intervals, the bind processing device further comprising: a sheet table for supporting sheets 15 of loose leaf paper; and an elevating pin provided on the sheet table and proceeding into the punch holes of the sheets of paper so as to correct a positional deviation of the punch hole of each sheet of paper.